

## Evaluating Arguments: The Premise-Conclusion Relation<sup>1</sup>

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### 1. Introduction

Three aspects of the evaluation of an argument are whether its premises are true or acceptable; whether it begs the question; and whether, apart from begging the question, its premises are properly related to its conclusion. This paper deals only with the last of these aspects. Its purpose is to ascertain under what conditions an argument's premises are related as they should be to its conclusion. When in the sequel I speak of an argument's being good or bad, or of evaluating it, I shall always intend, even if I omit, the qualification 'with respect to the relation between its premises and conclusion'. I shall exclude from consideration the following questions: whether argument forms, as well as arguments, can be valid; whether an argument that is valid is so only because of its form; and under what conditions one argument is better or worse than another.

In my discussion I shall assume the following: where '*p*' and '*q*' stand for propositions, '*p*' is either relevant or irrelevant to '*q*', in what might be called the 'probative sense'. For example, 'Most papers are too long' is relevant to 'This paper is too long', whereas 'At least one cat has kittens' is not. If '*p*' is relevant to '*q*', then it is so either favorably or unfavorably. For example, 'Most papers are too long' is favorably, whereas 'Few papers are too long' is unfavorably, relevant to 'This paper is too long'. If '*p*' is favorably or unfavorably relevant to '*q*', then it is so either conclusively or inconclusively. For instance, 'All papers are too long' is conclusively favorably relevant to 'This paper is too

long', because the first of these propositions entails the second; whereas 'Most papers are too long' is only inconclusively favorably relevant to 'This paper is too long', since the first of these propositions makes the second only probable. And finally, irrelevance as well as any degree of favorable or unfavorable relevance may be actual, attributed, or both. For example, in

Text 1: The fact that most papers are too long makes it certain that this paper is too long.

conclusive favorable relevance to the conclusion, 'This paper is too long', is attributed, but does not actually belong, to the premise, 'Most papers are too long'. But in

Text 2: The fact that most papers are too long makes it probable that this paper is too long.

inconclusive favorable relevance to the conclusion is attributed, and actually belongs, to the premise.

By 'argument' I understand the smallest unit of reasoning, consisting of at least one premise and exactly one conclusion. Just as a family consists not merely of people but of people related to each other in a certain way, so too an argument consists not merely of propositions but of propositions related in a certain way. In an argument, to some propositions (namely, the premises) is attributed<sup>2</sup> favorable relevance to another (the conclusion).<sup>3</sup> Such favorable relevance may be conclusive or inconclusive; if the latter, it admits of degrees.<sup>4</sup> Just as the same premise or conclusion may be expressed differently by different texts or sometimes left unexpressed, so too may the same degree of attributed favorable relevance.

For instance, Text 3 and Text 4

Text 3: The fact that all papers are too long makes it certain that this paper is too long.<sup>5</sup>

Text 4: The fact that all papers are too long implies that this paper is too long.

both express the same degree of attributed favorable relevance, whereas Text 5

Text 5: This paper is too long. All papers are.

leaves it unexpressed.

One argument is differentiated from another by at least these three things: premises, conclusions, or degrees of attributed favorable relevance. For instance, the arguments expressed in Text 1 and 3 are different arguments because they contain different premises. The arguments expressed in Texts 1 and 6

Text 6: The fact that most papers are too long makes it certain that something is too long.

are different because they contain different conclusions. And the arguments expressed in Texts 3 and 7

Text 7: The fact that all papers are too long makes it probable that this paper is too long.

are different because different degrees of favorable relevance to their conclusions are attributed to their premises.

I shall assume both that a text of the form 'The fact that *x* makes it probable that *y*' says that '*y*' is probable relative to '*x*', not that '*x*' entails that '*y*' is probable; and that a text of the form 'The fact that *x* makes it certain that *y*' says that '*y*' is certain relative to '*x*', not that '*x*' entails that '*y*' is certain.<sup>6</sup> Texts of these forms express arguments whose premise is '*x*' and whose conclusion is '*y*'.

## II. Under what conditions is an argument good or bad?

Under exactly what conditions is an argument good, and under what conditions is it bad? I shall examine six theories that

have been given as answers to this question. The first four all say that an argument's value is determined only by the actual, not even in part by the attributed, degree of favorable relevance of its premises to its conclusion. The last two say that an argument's value is determined partly by the actual, and partly by the attributed, degree of favorable relevance.

One of the means I shall employ to evaluate these theories is to appeal to our (presumably) shared intuitions that in some clear cases, of two arguments (e.g., those expressed in Texts 1 and 2), one is good and the other bad.

### A. First theory

According to the first theory, an argument is good (valid) if its premises are conclusively favorably relevant to its conclusion; otherwise, it is bad (invalid).<sup>7</sup> So, for instance, the argument expressed in Text 3 would be good (valid), since its premise is conclusively favorably relevant to its conclusion; whereas the argument expressed in

Text 8: The fact that at least one cat has kittens makes it certain that this paper is too long.<sup>8</sup>

would be bad (invalid), since its premise is not conclusively favorably relevant to its conclusion.

This first theory has the virtue of simplicity. But it is subject to the following objection.

*Objection.* If this theory were true, then the arguments expressed in Texts 1 and 2<sup>9</sup> would both be bad (invalid), because their premises are not conclusively favorably relevant to their conclusions.<sup>10</sup> But it seems that this would be incorrect, because one of the arguments is bad and the other good. Similarly, according to this theory the arguments expressed in Text 2 and

Text 9: The fact that most papers are too long makes the probability 0.9 that this paper is too long.

would both be bad, although it seems that in fact one is good. Likewise, this theory would not permit us correctly to distinguish the good from the bad arguments expressed in Text 2 and

Text 10: The fact that at least one cat has kittens makes it probable that this paper is too long.

Moreover, if this theory were true, the arguments expressed in

Text 11: The fact that 99% of all papers are too long makes it certain that this paper is too long.

and

Text 12: The fact that 99% of all papers are too long makes it probable that this paper is too long.<sup>11</sup>

would both be bad (invalid), because its premise is not conclusively favorably relevant to its conclusion. But intuitively it seems that one of these arguments is good, while the other is bad. Similarly, this theory would prevent us from properly distinguishing the good from the bad in the arguments expressed in Text 12 and

Text 13: The fact that 99% of all papers are too long makes the probability 0.999 that this paper is too long.

## B. Second theory

The second theory drops the first's presupposition that the premises of all arguments ought to be conclusively favorably relevant to their conclusions and admits that the premises of some arguments are properly related to their conclusions even though they are only inconclusively favorably relevant to them. According to the second theory, an argument is *valid* if its premises are conclusively favorably relevant to its conclusion, and *invalid* otherwise. But it is *strong* (*correct*, *reliable*, etc.) if its premises are inconclusively favorably relevant to its conclusion, and weak (*incorrect*, *unreliable*, etc.) if its premises are

irrelevant or unfavorably relevant to its conclusion. This means that all strong or weak arguments are invalid.<sup>12</sup>

For example, the argument expressed in Text 3 would be valid, since its premise is conclusively favorably relevant to its conclusion; whereas the argument expressed in Text 2 would be invalid but strong, since its premise is not conclusively but only inconclusively favorably relevant to its conclusion; and the argument expressed in Text 10 would be invalid and weak, because its premise is neither conclusively nor inconclusively favorably relevant to its conclusion.

This theory is an advance over the first, but it too is subject to some objections.

*Objection 1.* As a theory of the evaluation of arguments, Theory 2 must provide an answer to the question 'Under what conditions is an argument good, and under what conditions is it bad?' Because Theory 2 has not just one but two pairs of evaluative concepts intended to correspond to 'good' and 'bad' (namely, 'valid' and 'invalid', 'strong' and 'weak'), when it attempts to answer this question, it offers not just one but two answers. The first answer is that an argument is good (valid) if its premises are conclusively favorably relevant to its conclusion and bad (invalid) otherwise. The second is that an argument is good (strong) if its premises are inconclusively favorably relevant to its conclusion and bad (weak) otherwise. If at all pertinent to the question 'Under what conditions is an argument good, and under what conditions is it bad?', these two answers are mutually inconsistent. For an argument whose premises were conclusively favorably relevant to its conclusion would be good according to the first answer but bad according to the second, and an argument whose premises were inconclusively favorably relevant to its conclusion would be good according to the second answer but bad according to the first. If we simply conjoined these two answers, Theory 2 would say that an argument is good if and only if its premises are both

conclusively and inconclusively favorably relevant to its conclusion; and this would be internally inconsistent.

We might try to save Theory 2 from this contradiction by suggesting that it means either of the following two things: first, that every argument is good if and only if its premises are either conclusively or inconclusively favorably relevant to its conclusion—*i.e.*, its premises are favorably relevant to its conclusion (Theory 4 will say this); or, second, that some arguments are good if and only if their premises are conclusively favorably relevant to their conclusions, whereas other arguments are good if and only if their premises are inconclusively favorably relevant to their conclusions (Theory 5 will say this).

But neither of these things that Theory 2 might mean to escape internal inconsistency would be consistent with Theory 2 itself. The first would not, because it would require that Theory 2 (like Theory 4) employ a pair of evaluative concepts, one of which would be applicable to an argument when and only when its premises are favorably relevant to its conclusion, and the other of which would be applicable when and only when its premises are not favorably relevant to its conclusion. But Theory 2 has no such pair of evaluative concepts. Neither the pair 'valid' and 'invalid' nor the pair 'strong' and 'weak'—which are the only pairs of evaluative concepts that Theory 2 employs—fits this description. Nor would the second thing that Theory 2 might mean be consistent with the theory itself, because it would require that only those arguments whose premises ought to be conclusively favorably relevant to their conclusions be evaluated as valid or invalid, and that only those arguments whose premises ought to be inconclusively favorably relevant to their conclusions be evaluated as strong or weak (Theory 5 says this). But Theory 2 evaluates some arguments as both invalid and strong or as both invalid and weak. Moreover, Theory 2 provides no means of ascertaining which arguments' premises ought to be

conclusively, and which inconclusively, favorably relevant to their conclusions.<sup>13</sup>

Since, then, Theory 2 could avoid internal inconsistency only by meaning either of two things, each of which would be inconsistent with the theory itself, we may conclude that Theory 2 is self-contradictory.

*Objection 2.* If this theory were true, there would be no difference in value between the arguments expressed in Texts 1 and 2, since in each the premise is inconclusively favorably relevant to the conclusion, so that each argument would be strong. And since the premises in the two arguments are the same, and the conclusions are also the same, neither argument could be stronger than the other. The same would be true of the arguments expressed in Texts 2 and 9, in Texts 11 and 12, and in Texts 12 and 13. But intuitively it seems that in each of these contrasting pairs of arguments, one argument is good and the other bad.

So much for the objections to Theory 2. There is a variant of Theory 2, differing from it only in the addition of the adverb 'deductively' before 'valid' and 'invalid' and of the adverb 'inductively' before 'strong' and 'weak'.<sup>14</sup> This variant is not an improvement over the original, since it is subject not only to the same two objections as the original (allowing for the insertion of 'deductively' or 'inductively' wherever appropriate), but also to the following new objection.

*Objection 3.* What do the adverbs 'deductively' and 'inductively' mean? They would seem to mean 'in the manner of a deduction' and 'in the manner of an induction'. But what, according to this theory, is a deduction, and what is an induction? This question is interesting for two reasons. First, to be consistent in its exclusion of questions of attributed favorable relevance, the theory would probably define 'deduction' and 'induction' only in terms of actual favorable relevance. But if it did so, those definitions would probably duplicate those of 'deductively valid argument' and 'inductively strong argument', thereby

rendering the nouns 'deduction' and 'induction' powerless to explain the meanings of the adverbs 'deductively' and 'inductively'. And second, some theorists who advance this variant at the same time reject any distinction between deductive and inductive arguments.<sup>15</sup>

### C. The third theory

The third theory discards the second's extra pair of evaluative concepts, saying that an argument is good (cogent) if (i) its premises are favorably relevant to its conclusion, and (ii) its premises provide sufficient support for the conclusion. If either or both of these conditions fail, the argument is bad (not cogent, fallacious). As I understand it, this theory says that an argument's premises provide sufficient support for the conclusion either when they are conclusively favorably relevant to it or when they are sufficiently favorably relevant to the conclusion to make it reasonable to accept it, other things being equal.<sup>16</sup>

For example, the arguments expressed in Text 3 and

Text 14: The fact that almost all papers are too long makes it almost certain that this paper is too long.

would be good (cogent), since their premises are favorably relevant to, and provide sufficient support for, their conclusions. But the argument in Text 10 would be bad (not cogent, fallacious), since its premise is not favorably relevant to its conclusion. Similarly, the argument in Text 2 would be bad (not cogent, fallacious), since although its premise is favorably relevant to its conclusion, it does not provide sufficient support for (i.e., other things being equal, it does not make it reasonable to accept) its conclusion.

This theory is subject to the following objections.

*Objection 1.* This theory is inapplicable in some cases because it does not specify

just how favorably relevant premises must be to a conclusion in order to make it reasonable to accept the conclusion. Because it says that an argument's premises may be favorably relevant to, without also providing sufficient support for, its conclusion, the theory implies that, say, the premise '51% of all papers are known to be too long' does not make it reasonable to accept the conclusion 'This paper is too long', since it is only minimally favorably relevant to the conclusion. But what about the premises '60% of all papers are known to be too long', '70% of all papers are known to be too long', or '80% of all papers are known to be too long', which are increasingly favorably relevant to the same conclusion: which—if any—of them makes it reasonable to accept the conclusion, other things being equal?<sup>17</sup> Unless the theory specifies the least degree of favorable relevance sufficient to make it reasonable to accept the conclusion, we cannot use it to evaluate arguments with such premises and conclusions as the above.

Naturally, the theory would have not only to specify such a degree of favorable relevance but also to justify that specification. It would have to explain why one degree of favorable relevance rather than a lower is the least that makes it reasonable to accept the conclusion, other things being equal.

*Objection 2.* The theory's requirement that the premises provide sufficient support for the conclusion renders redundant its other requirement, that the premises be favorably relevant to the conclusion. For whenever the sufficiency requirement is satisfied, so is the relevance requirement.<sup>18</sup> For the purposes of Theory 3, the satisfaction of the sufficiency requirement is both necessary and sufficient for the argument's premises to be related as they should be to its conclusion.

*Objection 3.* If this theory were true, the arguments expressed in Texts 1 and 2, in Texts 2 and 9, and in Texts 2 and 10 would all be bad, because in none does the premise

provide sufficient support for the conclusion. Moreover, if Theory 3 were true, the arguments expressed in Texts 11 and 12 and in Texts 12 and 13 would all be good, since in each the premise is sufficiently favorably relevant to make its conclusion reasonable to accept, other things being equal. But intuitively it seems that in all of these contrasting pairs of arguments, one argument is good, while the other is bad.

#### D. The fourth theory

The fourth theory further liberalizes the conditions under which an argument can be good. It says that an argument is good (valid) if its premises are favorably relevant to its conclusion; otherwise, it is bad (invalid).<sup>19</sup>

For example, the arguments expressed in Texts 2 and 3 would be good (valid), since their premises are favorably relevant to their conclusions. But the argument expressed in Text 10 would be bad (invalid), since its premise is not favorably relevant to its conclusion.

This theory is worthy as a final attempt to adhere exclusively to actual favorable relevance in distinguishing good from bad arguments. It is in part correct, since no argument can be good unless its premises are at least favorably relevant to its conclusion. But it errs in making such favorable relevance not only a necessary, but also a sufficient, condition for the goodness of an argument, as the following objection shows.

*Objection.* If this theory were true, the arguments expressed in Texts 1 and 2 would both be good, neither involving a logical error; for in each the premise is favorably relevant to the conclusion. The same would be true of the arguments expressed in Texts 1 and 3, in Texts 2 and 9, in Texts 11 and 12, and in Texts 12 and 13. But intuitively, it seems that one argument in each of these pairs is good, while the other is bad.

#### E. The fifth theory

With the failure of four theories that evaluate arguments solely in terms of the actual favorable relevance of premises to conclusion, it is time to consider some theories that include attributed favorable relevance. The fifth and sixth are such theories. The fifth first divides all arguments into deductive and inductive and then uses one criterion to evaluate deductive arguments and another to evaluate inductive ones. The sixth, by contrast, evaluates all arguments, whether deductive or inductive, by a single criterion.

The fifth theory employs the following distinction, in terms of attributed favorable relevance, between deductive and inductive arguments: an argument is deductive if conclusive favorable relevance to its conclusion is attributed to its premises, and it is inductive (or nondeductive) if inconclusive favorable relevance to its conclusion is attributed to its premises.<sup>20</sup> It is assumed that no argument is both deductive and inductive and that every argument is one or the other.

According to this theory, an argument is valid if (i) it is deductive and (ii) its premises are conclusively favorably relevant to its conclusion; an argument is invalid if (i) it is deductive and (ii) its premises are not conclusively favorably relevant to its conclusion; an argument is strong (correct, reliable) if (i) it is inductive and (ii) its premises are favorably relevant to its conclusion; and an argument is weak (incorrect, unreliable) if (i) it is inductive and (ii) its premises are not favorably relevant to its conclusion.<sup>21</sup> There is thus one kind of goodness and badness (namely, validity and invalidity) that belongs to deductive arguments and another kind of goodness and badness (namely, strength and weakness, correctness and incorrectness, etc.) that belongs to inductive arguments.<sup>22</sup>

For instance, the argument expressed in Text 3 would be valid, because it is deductive, and its premise is conclusively

favorably relevant to its conclusion. But the argument expressed in Text 1 would be invalid, because it is deductive, and its premise is not conclusively favorably relevant to its conclusion.

Similarly, the argument expressed in Text 2 would be strong, because it is inductive, and its premise is favorably relevant to its conclusion. But the argument expressed in Text 10 would be weak, since although it is inductive, its premise is not favorably relevant to its conclusion.

This theory avoids many of the problems of its predecessors; but it is subject to the following five objections, only the first three of which can be answered.

*Objection 1.* Contrary to this theory's presupposition, the logical evaluation of an argument does not involve a comparison between features that the argument ought to have and features that it actually has. It involves, rather, ascertaining whether certain logical relations really hold between the argument's premises and its conclusion. So, for instance, to say that an argument is valid is not to say that it is good, actually possessing features that it ought to possess, but only that its premises entail its conclusion; and to say that an argument is invalid is not to say that it is bad, not actually possessing features that it ought to possess, but only that its premises do not entail its conclusion.<sup>23</sup>

Consequently, the logical evaluation of an argument is independent of all features that belong to the argument's context rather than to the argument itself. One such feature is the (degree of) attributed favorable relevance of its premises to its conclusion. So, the logical evaluation of an argument is independent of the (degree of) attributed favorable relevance of its premises to its conclusion. Such favorable relevance may tell us something about the arguer's state of mind, and it may therefore pertain to the evaluation of the arguer; but it has nothing to do with the evaluation of his argument.<sup>24</sup>

*Reply.* The logical evaluation of an argument with respect to the relation be-

tween its premises and conclusion is not purely descriptive, as the objection claims, but consists in judging the argument's worth. The meanings of the terms of logical evaluation, such as 'valid' and 'invalid', include the notions of 'good' or 'bad'. For it would be self-contradictory logically to evaluate an argument as valid (strong, cogent, *etc.*) and yet to say that the same argument is in no way good; and it would be self-contradictory logically to evaluate an argument as invalid (weak, fallacious, *etc.*) and yet to say that the same argument is in no way bad. Consequently, since the logical evaluation of an argument consists in judging whether it is valid (strong, cogent, *etc.*) or invalid (weak, fallacious, *etc.*), that evaluation involves at least judging whether the argument is in some way good or bad. And to judge this is to judge whether it actually has the features that it ought to have. So, whether or not it has any bearing on the evaluation of the arguer, such a contextual feature as the attributed (degree of) favorable relevance of the premises to the conclusion may have a bearing on an argument's evaluation.

*Objection 2.* Ascertaining what degree of favorable relevance to a conclusion is *attributed* to premises is alien to logic, which is concerned only with the degree of favorable relevance that *actually* obtains between premises and conclusion. Hence, logic cannot properly accommodate any concepts that include reference to attributed favorable relevance. And so, in logic neither 'deductive', 'inductive', 'valid', 'invalid', 'strong', nor 'weak' is defined even partly in terms of attributed favorable relevance.<sup>25</sup>

*Reply.* Although the claim that logic is not concerned with attributed favorable relevance might be true of formal logic, it is not true of logic in general. For one of the things that logic does is to describe how, through illatives like 'therefore' and 'because', we indicate our own, or detect others', arguments; and illatives are expressions of attributed favorable relevance. If logic can be properly concerned with

attributed favorable relevance in order to indicate or detect arguments, it can also properly be concerned with attributed favorable relevance in order to ascertain whether arguments are deductive or inductive, valid or invalid, strong or weak.

*Objection 3.* Sometimes arguers claim that their premises are favorably relevant to their conclusion without explicitly attributing one degree rather than another of favorable relevance.<sup>26</sup> Under this theory's definitions of deductive and inductive arguments, their arguments would be neither deductive nor inductive.<sup>27</sup> Consequently, under the provisions of this theory, these arguments, whether good or bad, would be neither valid, invalid, strong, nor weak.

*Reply 1.* The objection presupposes that an arguer who attributes to his premise some degree, or range of degrees, of favorable relevance to his conclusion always does so explicitly—e.g., by means of expressions like 'proves', 'suggests', 'certainly', or 'probably'. But this presupposition is false: an arguer may not make explicit all that he thinks concerning the relation between his premise and his conclusion: he may attribute to his premise some degree, or range of degrees, of favorable relevance to his conclusion without communicating that attribution to others. Therefore, contrary to the objection, even if an arguer does not explicitly claim that his premises are to some degree, or range of degrees, favorably relevant to his conclusion, it does not follow that, on Theory 5, his argument is neither deductive nor inductive.

Nor does it follow that, on Theory 5, we can have no justified belief about the content of the arguer's tacit attribution. For we may have pertinent knowledge about his reasoning habits, about the reasoning habits of a class of reasoners to which he belongs, or about the reasoning habits of people generally. Consequently, even though an arguer says nothing about the degree, or range of degrees, of favorable relevance of his premise to his conclusion, Theory 5 can

still assert that we can have good reasons for thinking his argument deductive or inductive.

*Reply 2.* To avoid the difficulty raised by the objection, the theory's definition of 'inductive argument' might be revised to this: "[A]n argument is inductive if and only if it is not deductive".<sup>28</sup> Thus the theory's distinction between deductive and inductive arguments would be exhaustive, and so every argument would be either valid, invalid, strong, or weak.

The same reply could answer the following additional objection to the theory's distinction between deductive and inductive arguments. The objection is this: The argument expressed in

Text 15: The fact that all papers are too long makes it at least probable that this paper is too long.

poses a problem for this theory: is it deductive or inductive? According to this theory, the distinction between deductive and inductive arguments is to be made solely on the basis of the premises' attributed degree of favorable relevance to the conclusion. This argument does not seem to be deductive, because to say that a premise makes a conclusion "at least probable" is to make a weaker claim than that it is conclusively favorably relevant to the conclusion. Nor does it seem to be inductive, because to say that a premise makes a conclusion "at least probable" is to make a weaker claim than that its premise is inconclusively favorably relevant to its conclusion.

The reply to this objection is that under the revised definition of 'inductive argument', the argument would be inductive, since it is not deductive.

*Objection 4.* How, according to this theory, should an argument's premises be related to its conclusion? Since this theory says that an argument's premises are properly related to its conclusion either when the argument is both deductive and valid or when it is both inductive and strong, it seems that, given its definitions, it assumes both that the premises of deductive



arguments ought to be conclusively favorably relevant to their conclusions, and that the premises of inductive arguments ought to be favorably relevant to their conclusions. The theory does not explain why these assumptions should be true, but it is not difficult to surmise their common explanation: the premises of any argument ought to be so related to its conclusion that the actual degree of favorable relevance of the premises to the conclusion agrees with the attributed: the degree of favorable relevance attributed to the premises determines the degree of favorable relevance that must actually belong to the premises in order for the argument to be good.

If this is its underlying principle, then the theory should contain only one pair of evaluative concepts, applicable to any argument, whether deductive or inductive. For if an argument's premises ought to be so related to its conclusion that the actual degree of favorable relevance of the premises to the conclusion agrees with the attributed, then any argument, whether deductive or inductive, is good when there is such agreement and bad when there is not. There is no reason to dedicate one pair of evaluative terms to deductive and a second to inductive arguments when the principle of evaluation is the same for both. In fact, doing so at best obscures, and at worst seems to deny, that identity. Therefore, the theory should contain only one pair of evaluative concepts.

*Objection 5.* According to this theory, the arguments expressed in Texts 2 and 9 would both be good (strong), because both are inductive, and in both the premise is favorably relevant to its conclusion. The same would be true of the arguments expressed in Texts 12 and 13. But intuitively this seems wrong: one of the arguments in these two contrasting pairs is good and the other bad.<sup>29</sup>

### F. The sixth theory

Theory 6 not only dispenses with Theory 5's unnecessary second pair of

evaluative concepts but also uses the concept of attributed favorable relevance not, as Theory 5 does, merely to separate those arguments that can be evaluated as valid or invalid from those that can be evaluated as strong or weak, but actually to evaluate arguments. This theory says that an argument is good (valid) if the attributed and actual degrees of favorable relevance of its premises to its conclusion agree, and bad (invalid) otherwise.<sup>30</sup> The attributed and actual degrees of favorable relevance of premises to a conclusion agree if the actual degree either coincides with, or else falls entirely within the limits of, the attributed.<sup>31</sup>

For instance, the argument expressed in Text 3 would be good (valid), because the actual and attributed degree of favorable relevance of the premise to the conclusion agree; for conclusive favorable relevance to its conclusion not only is attributed, but actually belongs, to its premise. But the argument expressed in Text 1 would be bad (invalid), because the actual and attributed degrees of favorable relevance do not agree: although conclusive favorable relevance to the conclusion is attributed, it does not actually belong, to the premise.

Similarly, the argument expressed in Text 2 would be good (valid), because the same range of degrees of favorable relevance to the conclusion that is attributed to the premise actually belongs to it. But the argument expressed in Text 10 would be bad (invalid), since the premise does not actually possess the range of degrees of favorable relevance attributed to it: although inconclusive favorable relevance to the conclusion is attributed, it does not actually belong, to the premise.

In favor of Theory 6 is the consideration that goodness (validity), as defined by this theory, is one of the things that may be taken into account when supplying premises that arguers have left unexpressed.<sup>32</sup> For instance, consider

Text 16: The fact that "Evaluating Arguments: The Premise-Conclusion Relation" is a paper makes it certain that it is too long.

Text 17: The fact that “Evaluating Arguments: The Premise-Conclusion Relation” is a paper makes it probable that it is too long.

Text 18: The fact that “Evaluating Arguments: The Premise-Conclusion Relation” is a paper makes the probability 0.9 that it is too long.

Supposing that each of these texts expresses an argument whose explicit premise is “Evaluating Arguments: The Premise-Conclusion Relation” is a paper’ and whose conclusion is ‘It is too long’; supposing that the arguer in each case has left one of his premises unexpressed; and supposing that, other things being equal, we should supply the weakest premise that will make the argument good, the problem is to find the right premise in each of these three cases. Theory 1 would add ‘All papers are too long’ to all three arguments, since that is the weakest premise that would make them all good (valid) in its sense. But that seems wrong in Texts 17 and 18, because ‘All papers are too long’ is not the weakest premise that would make these arguments good. Theory 2 would provide no guidance, since it has no way to ascertain which argument should be valid and which strong, or hence what premise should be added to any of the arguments. Theory 3 would incorrectly add ‘A very large majority of papers are too long’ to all the arguments, since that is the weakest premise that would clearly enable the premises both to be favorably relevant to, and to provide sufficient support for, their conclusions. Theory 4 would add ‘(At least) most papers are too long’ to all three arguments, since that is the weakest premise that would make their premises favorably relevant to their conclusions and hence that would render them all good (valid) arguments in its sense. But that assignment seems wrong in Texts 16 and 18. Theory 5 would correctly add ‘All papers are too long’ to the argument in Text 16, because it is deductive, and the addition of that premise would make it valid. Similarly, it would correctly add ‘Most

papers are too long’ to the argument in Text 17, because that argument is inductive, and that is the weakest premise that would make it strong. But for the same reason it would add the same premise to the argument in Text 18; for that is the weakest premise that would make the argument strong (i.e., make the premises favorably relevant to the conclusion)—even though doing so would not make the premises as favorably relevant to the conclusion as the arguer claimed. This last assignment seems wrong: it seems that the premise missing from the argument in Text 18 should be ‘90% of papers are too long’. And that is indeed what Theory 6 says. Like Theory 5, it would add ‘All papers are too long’ to the argument in Text 16 and ‘Most papers are too long’ to the argument in Text 17. But unlike Theory 5, it would add ‘90% of papers are too long’ to the argument in Text 18, because then the actual and attributed degrees of favorable relevance would agree. Theory 6, then, is the only one of the theories considered here that correctly selects the weakest premise that would make the argument good.<sup>33</sup>

Theory 6 is subject to Objections 1, 2, and 3 raised against Theory 5. But since I have already answered those objections, I will not repeat them here. There is one new objection to consider.

*Objection.* The theory confuses defects of an argument with defects of a proposition about the argument’s constituents. For example, according to this theory, the argument expressed in Text 1 would be bad (invalid), because there is disagreement between the actual and attributed degrees of favorable relevance of its premise to its conclusion. But this disagreement means only that the proposition ‘The fact that most papers are too long makes it certain that this paper is too long’, which is about that argument’s premise and conclusion, is false. The truth or falsity of this proposition is irrelevant to whether the argument is valid or invalid.

*Reply.* With each argument is associated

a proposition that says, at the minimum, that its premises are favorably relevant to its conclusion.<sup>34</sup> Sometimes, and perhaps always, this proposition is more detailed, saying, for example, either that the premises are conclusively favorably relevant to the conclusion or that they are to some degree inconclusively favorably relevant to it. So, the propositions 'Most papers are too long' and 'This paper is too long' constitute an argument, and one whose premise is the first of these propositions and whose conclusion is the second, only because favorable relevance to the second proposition is attributed to the first by some such associated proposition as 'The fact that most papers are too long makes it certain that this paper is too long'.

The question is whether the truth or falsity of the proposition associated with the whole argument determines whether the argument is good or bad. Theory 6's answer is affirmative. There is something to be said for, and something to be said against, this answer. In its favor are the facts, first, that it permits Theory 6, alone of all the theories examined here, to justify our intuitive discrimination of the good from the bad arguments expressed in Texts 2 and 9 and in Texts 12 and 13; and, second, that only Theory 6 can correctly select the weakest premise that will make the arguments in Texts 16, 17, and 18 good. Against it is the fact that it also dictates that Theory 6 discriminate a good from a bad argument in those expressed in Text 3 and

Text 19: The fact that all papers are too long makes it only probable that this paper is too long.

Although to some readers it will seem intuitive that the argument expressed in Text 3 is good while that expressed in Text 19 is bad,<sup>35</sup> to others it will seem equally intuitive that these arguments are both good.<sup>36</sup>

Whether we accept or reject Theory 6 depends in part on the comparative strengths of these favorable and unfavorable considerations. Others may judge differently,

but to me it seems more obvious that there is a difference in value between the arguments expressed in Texts 2 and 9 and in Texts 12 and 13, and that Theory 6 selects the right unexpressed premise in Texts 16, 17, and 18 than that there is no difference in value between those expressed in Texts 3 and 19.

Consequently, on this point at least, I judge that there is more to be said for Theory 6 than against it. And since the preceding five theories have all proved faulty in one way or another, I conclude that, of the six theories examined here, Theory 6 is the best: whether an argument is good or bad depends entirely on whether the proposition associated with that argument is true or false.<sup>37</sup> The associated proposition may accordingly be thought of as specifying the conditions under which the argument is good.

So (to complete the reply to the objection), the argument expressed in Text 1, consisting of the premise 'Most papers are too long' and the conclusion 'This paper is too long', is good if and only if the proposition associated with it—in this case, the proposition saying that the premise makes the conclusion certain—is true. Since that proposition is false, the argument is bad (invalid).

### III. Conclusion

Of the six theories examined here, the best is the last. Unlike Theories 1 and 3, it can distinguish the good from the bad arguments in Texts 2 and 10. Unlike Theory 4, it can distinguish the good from the bad in Texts 1 and 3. Unlike Theories 1 through 4, it can distinguish the good from the bad arguments in Texts 1 and 2 and in Texts 11 and 12. Unlike any of the other theories, it can distinguish the good from the bad in Texts 2 and 9 and in Texts 12 and 13. And unlike any of the others, Theory 6 can accommodate all of our intuitive judgments about what would be the weakest unexpressed premise that would make the arguments in Texts 16, 17, and 18 good.

## Notes

<sup>1</sup> I have benefited from the criticisms of J. Anthony Blair, Thomas E. Gilbert, David Hitchcock, the participants in the meeting of the Association for Informal Logic and Critical Thinking at the convention of the American Philosophical Association in Los Angeles on March 30, 1990, and *Informal Logic*'s referees.

<sup>2</sup> The agent of attribution is usually, but not necessarily always, a person. For clarification, see Bowles (1989:13).

<sup>3</sup> On this point, see Bowles (1989).

<sup>4</sup> For a probabilistic interpretation of such relevance, see Bowles (1990).

<sup>5</sup> *Objection.* It is necessary to distinguish an argument's premises' being conclusively favorably relevant to its conclusion from their making it certain. In the argument 'Quebec will separate from Canada, therefore Canada will not remain a single nation', for instance, the premise, 'Quebec will separate from Canada', is conclusively favorably relevant to the conclusion, 'Canada will not remain a single nation', and yet does not make it certain; for the premise is itself uncertain.

*Reply.* (1) The relation employed in the paper's illustrative texts is not 'x makes it certain that y' but 'The fact that x makes it certain that y', and this difference undermines the objection. For even if, as the objection asserts, the uncertainty of 'x' were incompatible with 'x makes it certain that y', it is not with 'The fact that x makes it certain that y': as long as 'x' is claimed to be true (as when referred to as a fact), 'y' can, without inconsistency, be claimed to be certain relative to it, even if 'x' is itself uncertain. For instance, the uncertainty of the premise 'There is carbon dioxide on Pluto' is compatible with 'The fact that there is carbon dioxide on Pluto makes it certain that there is at least one carbon compound on Pluto': as long as 'There is carbon dioxide on Pluto' is claimed to be true, 'There is at least one carbon compound on Pluto' can be claimed to be certain relative to it, even though the premise is itself uncertain. Similarly, the uncertainty of 'Quebec will separate from Canada' is compatible with 'The fact that Quebec will separate from Canada makes it certain that Canada will not remain a single nation'.

(2) Even if the relation employed in the paper had been 'x makes it certain that y', it

would still not be clear that the objection is correct. For it assumes that if 'x' makes 'y' certain, then 'x' is certain, because it can not make something else certain without being certain itself. This assumption is rendered doubtful by an argument whose premise is ' $1 = 1$ ', and Quebec will separate from Canada' and whose conclusion is ' $1 = 1$ '. Although the premise is uncertain (since it is a conjunction, one of whose conjuncts is uncertain), it seems to make the conclusion certain.

<sup>6</sup> Salmon (1963:61), Hempel (1965:58-59), Weatherford (1982:154), and especially Freeman (1983:3-8).

<sup>7</sup> Guttenplan and Tamny (1971:7-8):

The fact that a good argument cannot have true premises and a false conclusion can be used as a defining characteristic of such arguments. We may indeed now drop the vague term *good argument* and replace it with the precise term *valid argument*. An argument is said to be *valid* if it is impossible for its premises to be true and its conclusion false. Any argument in which it is possible to have true premises and a false conclusion is said to be *invalid*.

Hocutt (1979:138):

What are the distinguishing marks of good arguments? . . . [G]ood arguments have three virtues: (1) their premises imply their conclusions, (2) their premises are true, and (3) they carry conviction. Arguments that have the first virtue are *valid* . . .

The first requirement of sound argumentation is validity: the conclusion must follow from the premises; the premises must imply the conclusion. This . . . means that there must be no way that the conclusion could be false consistently with the premises' being true. . . .

<sup>8</sup> Here, as in all the texts except Texts 16-18, I assume that our attention is restricted to the explicit premise and conclusion.

<sup>9</sup> *Objection.* The plausibility of this and subsequent counterexamples derives from the question-begging form in which they are presented. For instance, the present counterexample is in the form of a *text* that expresses an argument. That text contains the expression 'The fact that . . . makes it probable that', which

reveals the degree of favorable relevance to the conclusion attributed to the premises. Presenting the argument expressed in a text including this expression presupposes that the attributed degree of favorable relevance has some bearing on the argument's evaluation—which is the very question to be decided. But if instead the counterexample had been cast in the form of an *analysis* of the argument

Premise. Most papers are too long.

Conclusion. This paper is too long.

it would have been free from that presupposition.

*Reply.* The reverse of the objection's allegation is true. Casting the counterexample in the form of a text permits, perhaps even invites, but certainly does not compel, the judgment that the particular degree of attributed favorable relevance in this case is pertinent to this argument's evaluation. Hence, the selection of the form of a text is not question-begging. But casting the counterexample in the form of an analysis would not permit that same judgment, since it would suppress the evidence showing what the particular degree of attributed favorable relevance is. So, the selection of the form of an analysis, rather than a text, would presuppose that the attributed degree of favorable relevance has no bearing on the argument's evaluation—which is the very question to be decided. Hence, that selection would beg the question.

<sup>10</sup> *Objection.* The theory requires for its defense the permissibility of adding unexpressed premises to an argument to make it good—i.e., to make its premises jointly conclusively favorably relevant to its conclusion. (See Govier [1987:25].) There are two ways this might be done in the present case to preserve our intuition that, of the arguments expressed in Text 1 and Text 2, one is good and the other bad. (1) To the argument expressed in Text 1 we might add the premise 'If most papers are too long, then this paper is too long', so that its premises jointly would be conclusively favorably relevant to its conclusion. In this way, the argument expressed in Text 1 would be good, whereas that expressed in Text 2 would remain bad. (2) To the argument expressed in Text 2 we might add the premise 'If most papers are too long, then it is probable that this paper is too long', so that its premises jointly would be conclusively favorably relevant to its conclusion. In this way, the argument expressed in Text 2 would be good, whereas that expressed

in Text 1 would remain bad.

*Reply.* Neither way of preserving our intuitions by adding an unexpressed premise to an argument is acceptable. (1) There are two reasons why the first way is unacceptable. First, it is pointless to add to an argument an unexpressed premise that is, in its own way, as unacceptable as the argument would have been without it; and for that reason it is pointless to add 'If most papers are too long, then this paper is too long' to the argument expressed in Text 1. And second, if we were to make good the argument expressed in Text 1 by adding to it the premise 'If most papers are too long, then this paper is too long', we might evenhandedly add the same unexpressed premise to the argument expressed in Text 2. Since that argument has the same explicit premise and conclusion as that expressed in Text 1, the addition of the same unexpressed premise to it would also make it good (according to Theory 1), thereby violating our intuition that, of the two arguments, one is good and the other bad. (2) The second way is unacceptable because adding the unexpressed premise 'If most papers are too long, then it is probable that this paper is too long' to the argument expressed in Text 2 would yield an argument that is good by Theory 1's account only if its conclusion were 'It is probable that this paper is too long'; but the argument's conclusion is 'This paper is too long'. (See the Introduction and the following note.)

Similar objections and replies could be offered concerning the comparisons of the arguments expressed in Texts 2 and 9, 2 and 10, 11 and 12, and 12 and 13.

<sup>11</sup> *Objection.* The argument expressed in Text 12 is deductively valid (i.e., its premise is conclusively favorably relevant to its conclusion). For in the most popular theory of probability, the claim 'it is probable that  $x$  is  $y$ ' means 'in most cases,  $x$  is  $y$ '.

*Reply.* The objection assumes that the conclusion of the argument expressed in Text 12 is 'It is probable that this paper is too long'; for only then would it be plausible that the premise '90% of all papers are too long' is what the conclusion means. This assumption is false: the conclusion is 'This paper is too long', just as it is in the arguments expressed in most of the other texts employed in the paper. For, as was observed in the Introduction, a text of the form 'The fact that  $x$  makes it probable that  $y$ ' says that ' $y$ ' is probable relative to ' $x$ ', not that ' $x$ ' entails that ' $y$ ' is probable. It is therefore a mistake to interpret the text, as does the

objection, as though 'probable' were part of the conclusion rather than part of the illative that indicates the argument.

<sup>12</sup> Manicas and Kruger (1968:25, 253):

. . . whenever an argument satisfies our criteria as a deduction, then it is, by definition, valid. Thus, if it is impossible for the premises to be true and the conclusion false, the argument is a deduction—and it is *valid*. If it does not satisfy this criterion, then it is an induction—and invalid. Remember, however, being invalid is not synonymous with being incorrect. Many inductions are *correct* arguments . . .

In sum, arguments are either valid or invalid; if they are valid, they are deductions; if they are invalid, they are inductions, which may be either correct or incorrect.

These authors sometimes use language (e.g., "deductively valid") that would be more appropriate to the variant of Theory 2.

<sup>13</sup> *Objection.* Theory 2 can provide such a means. For it can say that (a) if an argument's premises are conclusively favorably relevant to its conclusion, then they *ought* to be, and (b) if its premises are inconclusively favorably relevant to its conclusion, then they *ought* to be. ((a) and (b) appear to be consequences of a suggestion in Hitchcock (1981:15): ". . . we should assess [an argument] by those standards which give it the best chance of being a cogent argument.")

*Reply.* (1) The argument in

Text 7: The fact that all papers are too long makes it probable that this paper is too long.

seems to me, at least, to be a counterexample to claim (a) above, since although its premise is conclusively favorably relevant to its conclusion, it seems that it ought to be inconclusively favorably relevant. And the argument in Text 1 seems to be a counterexample to claim (b), since although its premise is inconclusively favorably relevant to its conclusion, it seems that it ought to be conclusively favorably relevant.

(2) It remains to be explained how, given the proposed amendment, Theory 2 can say we should evaluate an argument (like that expressed in Text 8) whose premises are not favorably relevant to its conclusion. Should such an argument be invalid because its premises should be, but aren't, conclusively favorably relevant to its conclusion? Or should it be weak because

its premises should be, but aren't, inconclusively favorably relevant to its conclusion?

(3) The objection seems to assume that an argument's premises *ought* to be related to its conclusion in whatever way they *are* related to it. (That, at least, would provide the simplest and most natural defense of (a) and (b).) But if this assumption were true, then if an argument's premises were not favorably relevant to its conclusion, then neither *ought* they to be. Such an argument, then, would not be bad (invalid or weak); for its premises would not be related to its conclusion otherwise than as they ought to be. Therefore, the objection seems to imply that an argument whose premises were neither conclusively nor inconclusively favorably relevant to its conclusion would be neither invalid nor weak—contrary to what the theory itself says. The objection, then, seems to be inconsistent with the theory it is meant to rescue.

<sup>14</sup> Skyrms (1975:6, 6-7):

Thus we see that arguments may have various *degrees of strength*. When the premises present absolutely conclusive evidence for the conclusion—that is, when the truth of the premises guarantees the truth of the conclusion—then we have the strongest possible type of argument. There are cases ranging from this maximum possible strength down to arguments where the premises are irrelevant to the conclusion, which have no strength at all.

When an argument is such that the truth of the premises guarantees the truth of the conclusion, we shall say that it is deductively valid. When an argument is not deductively valid but nevertheless the premises provide good evidence for the conclusion, the argument is said to be inductively strong. How strong it is depends on how much evidential support the premises give to the conclusion. . . . we can define these two concepts more precisely as follows:

*Definition 3:* An argument is *deductively valid* if and only if it is *impossible* that its conclusion is false while its premises are true.

*Definition 4:* An argument is *inductively strong* if and only if it is *improbable* that its conclusion is false while [i.e., given that] its premises are true, and it is not deductively valid. The *degree* of inductive strength depends on how improb-

able it is that the conclusion is false while [i.e., given that] the premises are true.

Seech (1987:66):

Although many arguments must be judged to be deductively invalid, some can still be judged worthwhile because of the *inductive strength* that they may have in varying degrees.

See also Hitchcock (1980:10), Machina (1982:307-312), McKay (1989:8-9, 13), and Bergmann, Moor, and Nelson (1990:9-12).

A less common form of this variant substitutes 'valid deductive' for 'deductively valid', 'inductive' for 'deductively invalid', and 'stronger inductive' or 'weaker inductive' for 'inductively strong' or 'inductively weak'. See Baum (1975:19-20, 22-23, 297-298) and (1981:424).

<sup>15</sup> Skyrms (1975:12-13) and Hitchcock (1980:10).

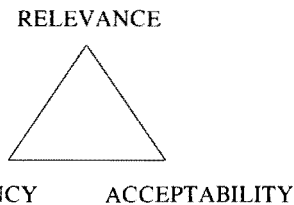
<sup>16</sup> Govier (1988:62):

... considered together, the premises [of a cogent argument] give sufficient reason to make it rational to accept the conclusion. This statement means more than that the premises are relevant. Not only do they count as evidence for the conclusion, they provide enough evidence, or enough reasons, taken together, to make it reasonable to accept the conclusion as true or as very probable.

See also Johnson and Blair (1983:33-34, 46):

... there are three different criteria that an argument must satisfy in order to be a good argument.

First, the premises must be *relevant* to the conclusion. Second, the premises must provide *sufficient* support for the conclusion. Third, the premises must be *acceptable*. . . . The point that needs to be underscored here is that this RSA triangle



defines a logically good argument; and that any argument which fails to satisfy one (or more) of these requirements is a fallacious argument.

... the evidence advanced in an argument can be fairly challenged as insufficient only when you, the critic, can cite some item of relevant evidence that would make a difference to the verdict and that has not been taken into account in the argument.

Similar to the theories of Professors Govier, Johnson, and Blair is that of Stephen N. Thomas, who first distinguishes the following five degrees of validity, or of support or strength, that may belong to an argument. (Thomas [1986:122] and Thomas [1973:79]) The highest degree of validity is *deductively valid*, at which the premises (or reasons), if true, "would totally guarantee" the conclusion: at this degree, "[i]t is logically impossible for the reason(s) to be true and the conclusion to be false." The next degree lower is *strong*, at which the premises make the conclusion "extremely likely, certain beyond any reasonable doubt." Next is *moderate*, at which the premises make the conclusion "a good bet" and the falsity of the conclusion "rather unlikely." Next is *weak*, at which the premises are logically relevant to, and provide some support for, the conclusion; but they neither make it "a good bet" nor justify accepting it as true. (Thomas [1986:134, 135]) The lowest degree of validity is *nil*, at which "the reasons and conclusion [are] completely irrelevant to each other as far as the relation of logical support or entailment is concerned." (Thomas [1984:33]) With this distinction drawn, Professor Thomas defines a valid argument as one possessing either of the two highest degrees of validity: "... a valid step of reasoning is one in which the reason(s) ARE RELATED TO the conclusion in such a way that, if the reason(s) were true, its (or their) truth would guarantee, or make extremely likely, the truth of the conclusion." (Thomas [1986:112]. See also Thomas [1986:120].) This theory can be cleared of the charge of giving incompatible accounts of validity by assuming that it uses 'validity' in two senses; but it is subject, *mutatis mutandis*, to the third objection raised to Theory 3.

<sup>17</sup> Johnson and Blair (1983:46): "There is no handy gauge that tells us how much evidence is enough."

<sup>18</sup> Cf. Govier (1988:62):

Relevance is a weaker condition than sufficiency of grounds. Any premises that are sufficient are also relevant, but it does not work the other way around. Premises can be relevant without giving sufficient grounds.

<sup>19</sup> Davis (1986:51, 49, 49): “. . . a valid argument is one in which the conclusion follows from the premises with necessity or probability.” “. . . an argument is *deductively valid* when the conclusion follows from the premises with necessity, and *inductively valid* when the conclusion follows from the premises with probability but not necessity.” “An argument is *invalid* if it is not valid—that is, if it is neither inductively nor deductively valid.”

Theory 4 was held by Stephen N. Thomas in the first edition of *Practical Reasoning in Natural Language*:

. . . a ‘valid argument’ is one in which the statements expressing the reasons are so related to the statement giving the conclusion that it is unlikely or impossible for the conclusion to be false if the reasons are true. (71)

<sup>20</sup> See Copi and Cohen (1990:48-49) and Hurley (1982:21). The latter author subsequently abandoned this way of drawing the distinction (Hurley [1988:30]).

<sup>21</sup> A variant of this theory says that an argument is *strong* if (i) it is inductive and (ii) its premises are inconclusively favorably relevant to its conclusion, and it is *weak* if (i) it is inductive and (ii) its premises are not inconclusively favorably relevant to its conclusion. See Hurley [1988:42]:

. . . a *strong inductive argument* is an inductive argument such that if the premises are assumed true, then, based on that assumption, it is probable that the conclusion be true. On the other hand, a *weak inductive argument* is an inductive argument in which the conclusion does not follow probably from the premises; in other words, an inductive argument such that if the premises are assumed true, then, based on that assumption, it is not probable that the conclusion be true.

This variant, unlike the version presented in the body of the paper, has the consequence that an inductive argument whose premises were

actually conclusively favorably relevant to its conclusion would be weak.

<sup>22</sup> Hurley (1988:40):

. . . a *valid deductive argument* is an argument in which the premises support the conclusion in such a way that if they are assumed true, it is impossible that the conclusion be false. Conversely, an *invalid deductive argument* is a deductive argument in which the conclusion does not follow necessarily from the premises; in other words, a deductive argument such that if the premises are assumed true, it is possible that the conclusion be false.

Copi (1986:547):

Inductive arguments are neither ‘valid’ nor ‘invalid’ in the sense in which those terms are applied to deductive arguments. Inductive arguments may, of course, be evaluated as better or worse, according to the strength of the support provided their conclusions by their premisses, that is, by the degree of likelihood or probability which their premisses confer upon their conclusions.

<sup>23</sup> Machina (1985:574):

There is nothing more to invalidity than the nonsatisfaction of a certain technical definition of validity. In pronouncing a verdict of ‘invalid’ upon an argument, one does not necessarily condemn the argument . . .

<sup>24</sup> Machina (1985:573-574, 577). See also Hitchcock (1981:8).

<sup>25</sup> Machina (1985:573-574, 577, 578).

<sup>26</sup> For example, illatives like ‘therefore’, ‘so’, and ‘because’ make explicit only the claim that one or more premises are favorably relevant to the conclusion.

<sup>27</sup> Govier (1987:30) and Hitchcock (1983:109).

<sup>28</sup> *Objection*. Such a definition of an inductive argument would be entirely negative. Although it would tell us that an inductive argument is not deductive, it would not tell us anything positive about what all inductive arguments have in common. (Govier [1987:50, 51-2]. See also Govier [1980a:11], [1980b:8], and [1988:260].)

*Reply*. (a) It is not necessary for a definition to specify something positive, rather than negative, common to the members of the class being defined. The complement of a class, for



instance, can properly be defined negatively. (b) Under the revised definition, inductive arguments would have in common at least what all arguments have in common—namely, that favorable relevance to their conclusions is attributed to their premises.

<sup>29</sup> Barker (1989:182-183):

... an inductive argument that can be valid and perfectly legitimate when a moderate degree of probability is claimed for the conclusion ... can become invalid and fallacious if an unduly high degree of probability is claimed for the conclusion . . . .

The fact that this author's definition of 'inductive argument' is narrower than that under consideration does not diminish the pertinence of this quotation.

<sup>30</sup> Allen (1988:59):

[According to the inference-claim criterion of inferential soundness,] [a]n argument's inference is sound if and only if the argument's inference claim is true.

By 'an argument's inference claim' Professor Allen means a claim that the argument's premise(s) support, perhaps to some specified degree, its conclusion (1988:57).

<sup>31</sup> *Objection.* The words 'valid' and 'invalid' should not be used synonymously with 'good' and 'bad' when applied to arguments. For these words are by custom used in deductive logic to describe arguments whose premises do or do not entail their conclusions. But not all good arguments' premises entail their conclusions.

*Reply.* This objection assumes that we should adhere only to deductive logic's use of the words 'valid' and 'invalid'. This assumption is false, for the following reasons.

(1) As argued in the reply to Objection 1 to Theory 5 above, 'valid' and 'invalid' are not neutral terms denoting only the presence or absence of entailment. They are evaluative terms more or less synonymous with 'good', 'worthy', or 'strong', and their opposites. Consequently, to call an argument 'valid' is to say at least that it is good, and to call an argument 'invalid' is to say at least that it is bad.

(2) So, to call 'valid' all and only those arguments whose premises entail their conclusions, and to call 'invalid' all and only those arguments whose premises do not entail their conclusions, is to evaluate those arguments as good or bad according to whether or not their

premises actually are conclusively favorably relevant to their conclusions.

(3) That this is undesirable, whether or not other arguments are evaluated as good or bad according to whether their premises actually are inconclusively favorably relevant to their conclusions, has been shown by the objections raised against Theories 1 and 2.

Therefore, the custom in deductive logic is wrong. We should not call arguments 'valid' or 'invalid' solely according to whether or not their premises entail their conclusions.

<sup>32</sup> See, for example, Scriven (1976:85, 166):

Second, they [missing premises] should be no stronger than they have to be, since they might then be too strong to be true, and you would then have constructed a 'straw-man' version of the argument, which you would be able to criticize even though the original argument was immune to your criticism.

Here's where we finally focus on the minimum plausible claim that's necessary to make the argument work, and that's (usually) what the assumption is.

<sup>33</sup> See Freeman (1984:39-40).

<sup>34</sup> Copi and Cohen (1990:45): "Every argument involves the claim . . . that its premisses provide some grounds for the truth of its conclusion . . . ."

<sup>35</sup> These readers would agree with Derek Allen that

... if you underestimate the strength of an argument that you make (by, for example, claiming that your premises make your conclusion very probable when in fact they necessitate it), then you make a mistake—indeed a logical mistake, a mistake in reasoning. It is not obvious to me that your mistake should not be thought to render your inference unsound, just as a proponent of the inference-claim criterion would maintain. (Allen [1988:63])

<sup>36</sup> These readers would agree with David Hitchcock that

... a cautious person may indicate that the conclusion is made probable by the premises when it in fact follows necessarily. It would be absurd to test an argument for a weaker kind of link when this very strong link exists. (Hitchcock [1983:109])

<sup>37</sup> Klenk (1983:6-7):

. . . in an argument, a *claim* is being made that there is some sort of evidential relationship between premises and conclusion: the conclusion is supposed to *follow from* the premises, or equivalently, the premises are supposed to *imply* the conclusion. This indicates that the correctness of an argument is a matter of the *connection* between premises and conclusion, and concerns the *strength of the relation* between them. We will evaluate an argument, then, on the basis of whether this evidential claim is correct, on whether the premises do in fact support,

or provide evidence for, the conclusion.

It is worth noting the similarity of this to two more familiar logical doctrines—namely, that a deductive argument is valid if and only if the associated conditional (whose antecedent is the conjunction of the argument's premises and whose consequent is its conclusion) is logically true; and that an inductive argument is valid (or correct) if and only if the associated statement of conditional probability (saying that the probability of the conclusion is some value, conditional on the premises) is true. (Burks [1977:22, 25])

### List of Texts

Text 1: The fact that most papers are too long makes it certain that this paper is too long.

Text 2: The fact that most papers are too long makes it probable that this paper is too long.

Text 3: The fact that all papers are too long makes it certain that this paper is too long.

Text 4: The fact that all papers are too long implies that this paper is too long.

Text 5: This paper is too long. All papers are.

Text 6: The fact that most papers are too long makes it certain that something is too long.

Text 7: The fact that all papers are too long makes it probable that this paper is too long.

Text 8: The fact that at least one cat has kittens makes it certain that this paper is too long.

Text 9: The fact that most papers are too long makes the probability 0.9 that this paper is too long.

Text 10: The fact that at least one cat has kittens makes it probable that this paper is too long.

Text 11: The fact that 99% of all papers are too long makes it certain that this paper is too long.

Text 12: The fact that 99% of all papers are too long makes it probable that this paper is too long.

Text 13: The fact that 99% of all papers are too long makes the probability 0.999 that this paper is too long.

Text 14: The fact that almost all papers are too long makes it almost certain that this paper is too long.

Text 15: The fact that all papers are too long makes it at least probable that this paper is too long.

Text 16: The fact that "Evaluating Arguments: The Premise-Conclusion Relation" is a paper makes it certain that it is too long.

Text 17: The fact that "Evaluating Arguments: The Premise-Conclusion Relation" is a paper makes it probable that it is too long.

Text 18: The fact that "Evaluating Arguments: The Premise-Conclusion Relation" is a paper makes the probability 0.9 that it is too long.

Text 19: The fact that all papers are too long makes it only probable that this paper is too long.

### References

Allen, Derek, "Inferential Soundness", *Informal Logic*, Vol. x, No. 2 (Spring 1988), 57-65.

Barker, Stephen F., *The Elements of Logic*, Fifth Edition (New York: McGraw-Hill Book Company, 1989).

Baum, Robert, *Logic* (New York: Holt, Rinehart and Winston, Inc., 1975).

Baum, Robert, *Logic*, Second Edition (New York: Holt, Rinehart and Winston, Inc., 1981).

- Bergmann, Merrie; Moor, James; and Nelson, Jack; *The Logic Book*, Second Edition (New York: McGraw-Hill Publishing Company, 1990).
- Bowles, George, "Favorable Relevance and Arguments", *Informal Logic*, Vol. xi, No. 1 (Winter 1989), 11-17.
- Bowles, George, "Propositional Relevance", *Informal Logic*, Vol. xii, No. 2, (Spring 1990), 65-77.
- Burks, Arthur W., *Chance, Cause, and Reason* (Chicago: The University of Chicago Press, 1963, 1964, 1977).
- Copi, Irving M., *Introduction to Logic*, Seventh Edition (New York: Macmillan Publishing Company, 1986).
- Copi, Irving M. and Cohen, Carl, *Introduction to Logic*, Eighth Edition (New York: Macmillan Publishing Company, 1990).
- Davis, Wayne, *An Introduction to Logic* (Englewood Cliffs, New Jersey: Prentice-Hall, 1986).
- Freeman, James B., "Logical Form, Probability Interpretations, and the Inductive/Deductive Distinction", *Informal Logic Newsletter*, Vol. v, No. 2 (June 1983), 2-10.
- Freeman, James B., "Reply to Engelbretsen", *Informal Logic*, Vol. vi, No. 3 (December 1984), 34-40.
- Govier, Trudy, "Critical Review of Wellman's *Challenge and Response*", *Informal Logic Newsletter*, Vol. ii, No. 2 (April, 1980a), 10-15.
- Govier, Trudy, "More on Deductive and Inductive Arguments", *Informal Logic Newsletter*, Vol. ii, No. 3 (June 1980b), 7-8.
- Govier, Trudy, *A Practical Study of Argument*, Second Edition (Belmont, California: Wadsworth Publishing Company, 1988).
- Govier, Trudy, *Problems in Argument Analysis and Evaluation* (Dordrecht, Holland: Foris Publications, 1987).
- Guttenplan, Samuel D. and Tamny, Martin, *Logic: A Comprehensive Introduction* (New York: Basic Books, Inc., 1971).
- Hempel, Carl G., "Inductive Inconsistencies", in Carl G. Hempel, *Aspects of Scientific Explanation* (New York: The Free Press, 1965), 53-79.
- Hitchcock, David, "Deduction, Induction and Conduction", *Informal Logic Newsletter*, Vol. iii, No. 2 (March 1981), 7-15.
- Hitchcock, David, "Deductive and Inductive: Types of Validity, Not Types of Argument", *Informal Logic Newsletter*, Vol. ii, No. 3 (June, 1980), 9-11.
- Hitchcock, David, *Critical Thinking: A Guide to Evaluating Information* (Toronto: Methuen, 1983).
- Hocutt, Max, *The Elements of Logical Analysis and Inference* (Cambridge, Massachusetts: Winthrop Publishers, Inc., 1979).
- Hurley, Patrick J., *A Concise Introduction to Logic* (Belmont, California: Wadsworth Publishing Company, 1982).
- Hurley, Patrick J., *A Concise Introduction to Logic*, Third Edition (Belmont, California: Wadsworth Publishing Company, 1988).
- Johnson, Ralph H. and Blair, J. Anthony, *Logical Self-Defense*, Second Edition (Toronto: McGraw-Hill Ryerson Limited, 1983).
- Klenk, Virginia, *Understanding Symbolic Logic* (Englewood Cliffs, New Jersey: Prentice-Hall, Inc., 1983).
- Machina, Kenton F., *Basic Applied Logic* (Glenview, Illinois: Scott, Foresman and Company, 1982).
- Machina, Kenton F., "Induction and Deduction Revisited", *Nous*, Vol. XIX, No. 4 (December 1985), 571-578.
- Manicas, Peter T. and Kruger, Arthur N., *Essentials of Logic* (New York: American Book Co., 1968).
- McKay, Thomas J., *Modern Formal Logic* (New York: Macmillan Publishing Company, 1989).
- Salmon, Wesley C., *Logic* (Englewood Cliffs, New Jersey: Prentice-Hall, Inc., 1963).
- Scriven, Michael, *Reasoning* (New York: McGraw-Hill Book Company, 1976).
- Seech, Zachary, *Logic in Everyday Life* (Belmont, California: Wadsworth Publishing Company, 1987).
- Skyrms, Brian, *Choice and Chance: An Introduction to Inductive Logic*, Second Edition (Encino, California: Dickenson Publishing Company, 1975).

Thomas, Stephen N., "Degrees of Validity and Ratios of Conceivable Worlds", *Informal Logic*, Vol. vi, No. 3 (December 1984), 31-34.

Thomas, Stephen N., *Practical Reasoning in Natural Language* (Englewood Cliffs, New Jersey: Prentice-Hall, 1973).

Thomas, Stephen N., *Practical Reasoning in Natural Language*, Third Edition (Englewood Cliffs, New Jersey: Prentice-Hall, 1986).

Weatherford, Roy, *Philosophical Foundations of Probability Theory* (London: Routledge & Kegan Paul, 1982).

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